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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/665,952	09/21/2000	Yoshiyuki Sogawa	32405W047	9483

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EXAMINER	
SELBY, GEVELL V	

ART UNIT	PAPER NUMBER
2615	

DATE MAILED: 03/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/665,952	SOGAWA, YOSHIYUKI	
	Examiner	Art Unit	
	Gevell Selby	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 September 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/10/04 has been entered.

Response to Arguments

2. Applicant's arguments filed 9/10/04 have been fully considered but they are not persuasive.

The applicant contends the Tanigawa patent lacks the feature of the address generator correcting a location of the range for the referenced pixel region based on the amount of deviation of an infinite distance corresponding point, said amount being individually set for each location in said first image. The examiner disagrees.

Examiner's Response:

The Tanigawa reference discloses the distance detection circuit or address generator corrects each window or location of the range by using the bias (bs) or amount of deviation on the parallax at a point a infinity with respect to the referenced pixel region (see column 4, lines 10-14 and 22-55 and column 8, lines 37-55). The amount of deviation of an infinite distance corresponding point is individually set for each search window or range location in the first image (see column 9, lines 5-25).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 - 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Tanigawa et al., US 5,915,033.

In regard to claim 1 Tanigawa et al., US 5,915,033, discloses a stereo matching apparatus (see figure 1a) comprising:

a stereo camera system (see figure 1a, element 10) for taking pictures of a predetermined area and producing first and second images of the predetermined area(see column 3, lines 63-65);

a memory (see figure 1b, elements ID1 and ID2) for storing first image data within a reference pixel region in the first image and second image data on a horizontal line in the second image, the horizontal line being corresponding to a vertical position of the reference pixel region in the first image (see column 3, lines 63-65);

an address generator (see figure 1b, element 40) for setting a search range for a stereo matching and instructing to read out from said memory a part of the second image data which is within the search range and the first image data within the reference pixel region see column 4, lines 10- 15); and

a stereo matching unit (see figure 1b, element 50) for identifying a correlated destination of the reference pixel region by the stereo matching based on the part of the

second image data which is within the search range and the first image data within the reference pixel region which are read out from said memory and calculating a parallax of the reference pixel region based on the correlated destination of the reference pixel region (see column 8, lines 44-55),

wherein said address generator corrects a location of the search range for the reference pixel region based on the amount of deviation of an infinite distance corresponding point, said amount being individually set for each location in said first image (see column 4, lines 10-14 and 22-48 and column 8, lines 37-55).

In regard to claim 2, Tanigawa et al., US 5,915,033, discloses the stereo matching apparatus as recited in claim1, wherein said address generator shifts the location of the search range (WD2) in the same direction as a direction of the deviation of the infinite distance corresponding point with respect to the horizontal position of the reference pixel region (see column 4, lines 10-15).

In regard to claim 3, Tanigawa et al., US 5,915,033, discloses the stereo matching apparatus as recited in claim 2, wherein said address generator shifts a starting point of the search range (WD2) in the same direction as the direction of the deviation of the infinite distance corresponding point (see column 4, lines 10-15).

It is inherent that when the search range is shifted the starting point is included in that shift.

In regard to claim 4, Tanigawa et al., US 5,915,033, discloses the stereo matching apparatus as recited in claim 2, wherein said address generator shifts a end point of the

search range (WD2) in the same direction as the direction of the deviation of the infinite distance corresponding point (see column 4, lines 10-15).

It is inherent that when the search range is shifted the end point is included in that shift.

In regard to claims 5, 6, 7, and 8 Tanigawa et al., US 5,915,033, discloses the stereo matching apparatus as recited in claims 1, 2, 3, and 4, wherein said address generator identifies the amount of correction of the search range (bs) in relation to the amount of deviation of the infinite distance corresponding point (see column 4, lines 38-39 and 49-55).

In regard to claim 9, Tanigawa et al., US 5,915,033, discloses the stereo matching apparatus as recited in claim 2, further comprising:

a correction value memory (see figure 1b, element 52) for storing a correction value for correcting the location of the search range in relation to a location of the reference pixel region in the first image (see column 4, lines 49-55);

It is inherent that the storage means stores the calculated correction value until it is used to calculate the parallax.

wherein said address generator sets the location of the search range for the reference pixel region based on the location of the reference pixel region and the correction value stored in said correction value memory for said location of the reference pixel region (see column 8, lines 37-55).

In regard to claim 10, Tanigawa et al., US 5,915,033, discloses the stereo matching apparatus as recited in claim 3, further comprising:

a correction value memory (see figure 1b, element 52) for storing a correction value for correcting the location of the search range in relation to a location of the reference pixel region in the first image (see column 4, lines 49-55);

It is inherent that the storage means stores the calculated correction value until it is used to calculate the parallax.

wherein said address generator sets the starting point of the search range for the reference pixel region based on the location of the reference pixel region and the correction value stored in said correction value memory for said location of the reference pixel region (see column 4, lines 40 – 48 and column 8, lines 37-55).

In regard to claim 11, Tanigawa et al., US 5,915,033, discloses the stereo matching apparatus as recited in claim 1 wherein said stereo camera system comprises a pair of stereo cameras mounted on a vehicle (see column 1, lines 20-21), the pair of stereo cameras taking pictures of scenes outside of the vehicle (see column 1, lines 25-32), and said stereo matching unit calculates a distance to an object outside the vehicle on the basis of the parallax of the reference pixel region (see column 1, lines 20-25).

It is inherent that the camera is mounted to the vehicle in order to capture the images of the vehicles around the car to prevent collisions.

In regard to claim 12, Tanigawa et al., US 5,915,033, discloses a stereo matching method comprising:

taking pictures of a predetermined area and producing first and second images of the predetermined area (see figure 3, lines 63-67);

identifying a reference pixel region (WD1) in the first image (see figure 4, lines 1-3);

identifying a search range (WD2) for the reference pixel region in the second image (see figure 4, lines 1-3);

correcting a location of the search range for the reference pixel region based on the amount of deviation of an infinite distance corresponding point with respect to a horizontal position of the reference pixel region (see column 4, lines 31-47); and

identifying a correlated destination of the reference pixel region by searching through the search range (see column 4, lines 40-45);

and wherein said amount is individually set for each location in said first image (see column 9, lines 5-25).

In regard to claim 13, Tanigawa et al., US 5,915,033, discloses the stereo matching method as recited in claim 12, wherein said step of correcting the location of the search range shifts the location of the search range in the same direction as the direction of the deviation of the infinite distance corresponding point with respect to the horizontal position of the reference pixel region (see column 4, lines 40-55).

In regard to claim 14, Tanigawa et al., US 5,915,033, discloses the stereo matching method as recited in claim 13, wherein said step of correcting the location of the search range shifts a starting point of the search range in the same direction as the direction of the deviation of the infinite distance corresponding point with respect to the horizontal position of the reference pixel region (see column 4, lines 40-55).

It is inherent that when the search range is shifted the starting point is included in that shift.

In regard to claims 15-19, Tanigawa et al., US 5,915,033, discloses the stereo matching method as recited in claims 13-15, wherein said step of correcting the location of the search range shifts a end point of the search range in the same direction as the direction of the deviation of the infinite distance corresponding point with respect to the horizontal position of the reference pixel region (see column 4, lines 40-55).

It is inherent that when the search range is shifted the end point is included in that shift.

In regard to claim 20, Tanigawa et al., US 5,915,033, discloses the stereo matching method as recited in claim 12, further comprising:

calculating a distance to an object outside a vehicle on the basis of the correlated destination of the reference pixel region, wherein said step of taking pictures of the predetermined area takes pictures of scenes outside of the vehicle (see column 1, lines 23-39).

In regard to claim 21, Tanigawa et al., US 5,915,033, discloses the stereo matching method as recited in claim 12, further comprising:

taking picture of a screen by a pair of stereo cameras and producing third and fourth images of the screen, said screen being drawn a first vertical line and a second vertical line at an interval equal to a baseline of the stereo cameras (see column 3, lines 15-20);

identifying a deviation of a position of the second vertical line shown on the fourth image with respect to a position of the first vertical line shown on the third image (see column 3, lines 15-25) ; and

calculating an infinite distance corresponding point corresponding to each position on the first vertical line shown on the third image on the basis of the deviation of the position of the second vertical line, wherein said step of correcting the location of the search range uses the infinite distance corresponding point thus calculated as the infinite distance corresponding point corresponding to the horizontal position of the reference pixel (see column 3, lines 9-25 and column 4, 30-55).

In regard to claim 22, Tanigawa et al., US 5,915,033, discloses a method of calculating an infinite distance corresponding point, the method comprising:

taking picture of a screen by a pair of stereo cameras and producing first and second images of the screen (see column 3, lines 49-67), said screen being drawn a first vertical line and a second vertical line at an interval equal to a baseline of the stereo cameras (see column 3, lines 15-16);

identifying a deviation of a position of the second vertical line shown on the second image with respect to a position of the first vertical line shown on the first image (see column 4, lines 10-15); and

calculating each infinite distance corresponding point corresponding to each position on the first vertical line shown on the first image on the basis of the deviation of the position of the second vertical line (see column 4, lines 31-55).

In regard to claim 23, Tanigawa et al., US 5,915,033, discloses a stereo matching apparatus comprising:

a stereo camera system for taking pictures of a predetermined area and producing first and second images of the predetermined area (see column 3, lines 49-67);

a reference pixel region identifying unit (distance detection circuit) for identifying a reference pixel region (WD1) in the first image (see column 4, lines 40-48);

a search range identifying unit (distance detection device) for identifying a search range for the reference pixel region (WD2) in the second image (see column 3, line 63 to column 4, line 9) ;

a correction unit (distance detection device) for correcting a location of the search range for the reference pixel region based on the amount of deviation of an infinite distance corresponding point with respect to a horizontal position of the reference pixel region (see column 4, lines 31-48); and

a correlated destination identifying unit (distance detection device) for identifying a correlated destination of the reference pixel region by searching through the search range (see column 4, lines 49-55);

wherein said amount is individually set for each location in said first image (see column 9, lines 5-25)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gevell Selby whose telephone number is 571-272-7369. The examiner can normally be reached on 8:00 A.M. - 5:30 PM (every other Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Groody can be reached on 571-272-7950. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

gvs

TUAN HO
PRIMARY EXAMINER